

FINAL CLOSURE RESULTS AND REPORTS

SKF ROLLER BEARINGS DIVISION

SKF INDUSTRIES, INC.

September 3, 1985

Robert Benvin
Commonwealth of Pennsylvania
Department of Environmental Resources
Bureau of Solid Waste Management
One Ararat Boulevard
Harrisburg, PA 17110

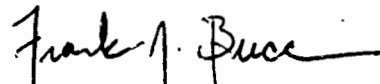
Dear Mr. Benvin:

Per our conversation of the week of August 12, 1985, you indicated SKF Industries, Shippensburg Facility, can file as a Protection Filer and terminate the Part A Permit-Interim Status processed with PADER July 17, 1981.

Please send me the necessary forms to complete so as to notify EPA and PADER of the above status change to Permit-By-Rule.

If you have any questions pertaining to this, feel free to call.

Sincerely,



Frank J. Bucceri
Plant Engineer

jk

SKF ROLLER BEARINGS DIVISION

September 16, 1985

Robert Benvin
Commonwealth of Pennsylvania
Department of Environmental Resources
Bureau of Solid Waste Management
One Ararat Boulevard
Harrisburg, PA 17110

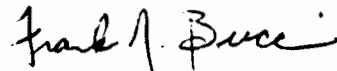
Dear Mr. Benvin:

This is to confirm our conversation of September 13, 1985, to which John Stevenson and yourself gave verbal approval for the October 1, 1985, commencement of closure activities.

Also discussed was the preliminary approval of closure as sludge tanks by John Stevenson and his discussions with EPA.

A meeting planned by SKF to be held prior to closure activities will not be held due to present schedules by the Department. It was decided during the conversation that this meeting was not necessary if SKF remained in contact with the Department (Don Killian). I will contact Don, September 20, 1985, to confirm activities and to have Mr. Killian on site during closure activities.

Sincerely,



Frank J. Bucceri
Plant Engineer

jk

cc: Mr. J. Roback
Mr. T. Taylor
Mr. T. Gifford
Mr. R. Pfeiffer



NASSAUX-HEMSLEY, INCORPORATED-CONSULTANTS

NHI BUILDING - 56 NORTH SECOND STREET CHAMBERSBURG, PENNSYLVANIA 17201

September 16, 1985

Corporate Officers:
WILLIAM T. HEMSLEY, P.E.
GORDON LAMBERT, P.E.
MAURICE L. GOSSERT

Principals:
JOHN W. GAUDLIP, P.E.
RALPH P. MATTER
JEFF PEPPER, P.E.
CHARLES C. RIDER
KENNETH E. SCHAUBLIN, II
WILLIAM J. WALSH, P.E.

Mr. Frank Bucceri, Engineer
SKF Industries
West King Street
Shippensburg, Pennsylvania 17257

Re: Our File No. 85ES10.01

Dear Frank,

In response to our conversation of September 16, I have the following thoughts:

1. The decrease in TCE at the pumping well is encouraging, however, we are still in a dry weather/low water table period. If the TCE stays low during a rising water table period after removal of the contaminated soil, then the contamination source will have been removed.
2. Drilling another monitoring well in the immediate area of the contaminated soil is tricky business. If the well is not properly grouted, shallow contaminated soil water could short circuit to the aquifer. It is certainly technically feasible to construct such a well, however, it will not be inexpensive.
3. I would advise continued monitoring of the concentration of TCE in the pumping well monthly (using Lancy Labs for continuity) for at least one year after removal of the soil. If this monitoring data shows that the contaminant source has not been removed, additional monitoring wells could then be added to help find the source. At this point, however, I am optimistic that your planned soil removal in the old sludge bed area will effectively remedy the problem.
4. The Pennsylvania Department of Environmental Resources' (PaDER) letter of March 5, 1985, raised several questions over the results of analysis of ground water samples. As we will be collecting quarterly monitoring well samples this month, we can perform those additional analyses

Mr. Frank Bucceri, Engineer

Page 2

September 16, 1985

necessary to address PaDER's concerns, and provide clarifying responses to PaDER shortly after we receive results of those analyses.

Good luck on your planned soil removal program. I hope the weather cooperates.

Very truly yours,

NASSAUX-HEMSLEY, INCORPORATED

Jeffrey R. Pepper, P.E.
Manager of Geological Services

JRP:1sm

SKF ROLLER BEARINGS DIVISION

September 17, 1985

Mr. Robert Benvin
Commonwealth of Pennsylvania
Department of Environmental Resources
Bureau of Solid Waste Management
One Ararat Boulevard
Harrisburg, PA 17110

REFERENCE: SKF CLOSURE PLAN AND STUDY OF GROUNDWATER CONTAMINATION
SHIPPENSBURG FACILITY - I.D. NO. PAD 003026606 FRANKLIN COUNTY

Dear Mr. Benvin:

This letter is in response to your request to address a letter from PADER dated March 5, 1985. The PADER letter was a response to the SKF Industries Closure Plan submitted November 1, 1984.

SKF Industries plans to approach the items of question as follows:

- a. Page 2, item A-1. "Before the contamination at this site can be satisfactorily remedied, the extent of TCE contamination in the soil should be addressed with respect to depth (vertical migration) and area (lateral migration). TCE contamination appears to be much more extensive than the closure plan reveals. Excavation of only 3 feet of soil from under the filter beds is not acceptable."

Refer to the Addendum to Closure Plan dated August 17, 1985, for revised approach.

- b. Page 2, item A-4. "Verification sampling of soil after excavation of the filter beds and underlying soil should include trichloroethylene, perchloroethylene and chloroform."

Refer to the Addendum to Closure Plan dated August 17, 1985, exhibit 1 for revised approach.

Soil samples taken after partial closure (removal of sludge tanks and 3 feet of soil under beds) were analyzed for a moderately extensive suite of volatiles. Soil samples at final closure will include perchloroethylene and chloroform.

The samples taken during partial closure indicated only trace amounts of chloroform in the soil. An analysis taken 7/31/85 for the five on site monitoring wells indicated trace amounts of chloroform except at monitoring well #2 upgradient from the contaminated area. This well indicated a

higher than usual amount of chloroform and will be addressed after a second analysis is done in September. The analysis taken on the wells also indicated only trace amounts of perchloroethylene (see enclosure).

Also please note an analysis done by B-H Laboratories 3/18/85 for the contaminated well. This analysis indicated no contamination? (see enclosure). → *incorrect analysis done by B-H.*

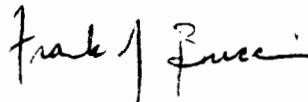
Because of the consistency of Lancy Laboratory results for TCE with respect to collected data, SKF Industries will continue to use this firm for all future TCE analysis.

c. Page 2, item B. Groundwater Study. Refer to the Addendum to Closure Plan dated August 17, 1985, Section 9.0 Groundwater Monitoring Program and letter dated September 16, 1985, from Nassaux-Hemsley Inc., preparer of the Groundwater Study referred above.

Sampling of the on site monitoring wells will be conducted at the end of September at which time analysis will be done to answer questions in item B Groundwater Study.

It is SKF Industries' full intention to cooperate with PADER and to close the sludge tanks as economically and as soon as possible. Your cooperation is appreciated.

Sincerely,



Frank J. Bucceri
Plant Engineer

ch

cc: J. Roback
T. Taylor
T. Gifford
R. Pfeiffer
B. McGlocklin

ANALYSIS REPORT



**LANCY
LABORATORIES**

Division, Lancy International, Inc.
525 W. New Castle St., P.O. Box 490
Zellenople, Pennsylvania 16063

SKF Industries
West King Street
Shippensburg, PA 17257

Attention: Robert Sterken

Report Date 7/31/85

Collected 7/15/85 by N-H
Received 7/23/85 by LS
Analyzed 7/23 - 7/31/85 by FJR
No. of Samples 5
P.O. # 4-009530

Monitoring Well Samples

Sample #	EAST TURNER MW 1	EAST TURNER MW 2	EAST TURNER MW 3	EAST TURNER MW 4	EAST TURNER MW 5
Lab Reference #	14155	14156	14157	14158	14159
Parameter	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Trichloroethylene	3.7	<2	<2	<2	<2
Perchloroethylene	<5	<5	<5	<5	<5
Chloroform	<2	105	<2	14	3.9
Chlorine + Organics					
CITY WATER SUPPLY	50 ppb.				


C. John Ritzert, Manager-Technical Services

ANALYSIS REPORT



**LANCY
LABORATORIES**
Division, Lancy International, Inc.
525 W. New Castle St., P.O. Box 490
Zelleno, Pennsylvania 16063

SKF Industries
West King Street
Shippensburg, PA 17257

Attention: Robert Sterken

Report Date 9/10/85

Collected 9/3/85 by ROS
Received 9/5/85 by LS
Analyzed 9/5 - 9/6/85 by FJR
No. of Samples 3
P.O. # 4-008156

Sample Lab Reference # <u>Parameter</u>	W59 <u>15281</u> (ug/L)	F59 15279 (ug/L)	I59 15280 (ug/L)
Trichloroethylene	6.5	2.2	<2


C. John Ritzert, Manager-Technical Services



COMPLETE ANALYTICAL SERVICES

1804 WEST KING STREET • YORK, PENNSYLVANIA 17404

PHONE AREA 717: 843-5551

04/05/85

Certificate of Analysis:

SKF Industries Inc
SKF Roller Bearings Division
West King Street
Shippensburg PA 17257

This report is based on an analysis
of the sample identified below. The
sample was delivered to B-H
Laboratories on 03/19/85 by
D R Boyer . Job # 16-63672-65

Attn: Mr Frank J Bucceri

Sample 85-0953 taken 03/18/85 Air Stripper Discharge

Test	Results	Units
1,1,1-Trichloroethane	<0.5	ppb
Tetrachloroethene	<0.5	ppb
Chloroform	<0.5	ppb

CERTIFIED:

David R Boyer

B-H Laboratories offers no opinion as to the acceptability
of the sample source for any use or purpose.

All analyses are performed in accordance with procedures outlined in Standard
Methods for the Examination of Water and Waste Water, 15th Edition, published
by the American Public Health Association, unless otherwise indicated.

Requested

Trichloroethylene
Perchloroethylene
chloroform.

NASSAU HEMSLEY, INCORPORATED - CONSULTANTS

NEW BUILDING IN FRONT OF SECOND STREET CHAMBERSBURG, PENNSYLVANIA 17209

September 16, 1985

Corporate Officers:
WILLIAM T. HEMSLEY, P.E.
GORDON LAMBERT, P.E.
MAURICE L. GOBERT

Principals:
JOHN W. GAUDUP, P.E.
RALPH P. MATTER
JEFF PEPPER, P.E.
CHARLES C. RIDER
KENNETH E. SCHAEFER, P.E.
WILLIAM J. WILSON, P.E.

Mr. Frank Buccarelli, Engineer
S&H Industries
West King Street
Shippensburg, Pennsylvania 17257

Re: Our File No. 85ESI6.01

Dear Frank,

In response to our conversation of September 16, I have the following thoughts:

1. The decrease in TCE at the pumping well is encouraging, however, we are still in a dry weather/low water table period. If the TCE stays low during a rising water table period after removal of the contaminated soil, then the contamination source will have been removed.
2. Drilling another monitoring well in the immediate area of the contaminated soil is tricky business. If the well is not properly grouted, shallow contaminated soil water could short circuit to the aquifer. It is certainly technically feasible to construct such a well, however, it will not be inexpensive.
3. I would advise continued monitoring of the concentration of TCE in the pumping well monthly (using Lancy Labs for continuity) for at least one year after removal of the soil. If this monitoring data shows that the contaminant source has not been removed, additional monitoring wells could then be added to help find the source. At this point, however, I am optimistic that your planned soil removal in the old sludge bed area will effectively remedy the problem.
4. The Pennsylvania Department of Environmental Resources' (PaDER) letter of March 5, 1985, raised several questions over the results of analysis of ground water samples. As we will be collecting quarterly monitoring well samples this month, we can perform those additional analyses

...PADEN's concerns and provide
classification to Paden shortly after we receive
results of those analyses.

...your planned soil removal program. I hope the

Very truly yours,

JEFFREY M. REFFERT

Jeffrey M. Reffert
Manager of Geological Services

SKF ROLLER BEARINGS DIVISION

September 18, 1985

Mr. Don Killian
Commonwealth of Pennsylvania
Department of Environmental Resources
Bureau of Solid Waste Management
One Ararat Boulevard
Harrisburg, PA 17110

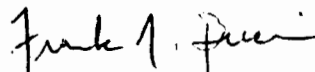
Dear Mr. Killian:

As you know, SKF Industries will be removing contaminated soil from the sludge tank area October 1, 1985. SKF Industries plan of action is based upon information collected from phone conversations and a meeting held in August at SKF with Bob Benven and John Stevenson.

At present, the plan is to remove soil at the two hot spots found after partial closure (refer to exhibit VI, Addendum to Closure Plan). A third spot to be examined will be at Lancy Laboratories soil composite #4 (refer to exhibit V, Addendum to Closure Plan).

Please advise me of any changes or thoughts you would have pertaining to the present plan. Your cooperation will be appreciated.

Sincerely,



Frank J. Bucceri
Plant Engineer

ch

cc: J. Roback
T. Taylor
T. Gifford
R. Pfeiffer
B. McGlocklin

copies - J. Roach -
T. Taylor
T. Gifford
R. Pfeiffer



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES

BUREAU OF SOLID WASTE MANAGEMENT

One Ararat Boulevard

Harrisburg, Pennsylvania 17110

(717) 657-4588

September 20, 1985

Mr. Frank J. Bucceri
Plant Engineer
SKF Roller Bearings Division
King Street (West)
Shippensburg, PA 17257

Re: SKF Closure Plan
PAD 003026606
Shippensburg Borough, Franklin County

Dear Mr. Bucceri:

We have reviewed the Closure Plan Addendum which you have submitted dated August 30, 1985. We agree that the sludge beds should be considered tanks and closed accordingly. Therefore, the closure plan is approved as submitted.


Please contact this office in advance in order that a representative may be on-site during excavation of contaminated soil.

Air stripping of the groundwater will continue until Drinking Water Standards have been achieved.

After closure has been completed, please submit certification by owner/operator and an independent registered professional engineer that closure has been completed in accordance with the approved closure plan.

If you have any questions, please contact me.

Sincerely,


Robert G. Benvin
Facilities Supervisor
Harrisburg Regional Office

RGB:flw

cc: U.S. Environmental Protection Agency

LANCY International, Inc.

Reply To:

Box 490, Zellenople, PA 16063

1 60 Connolly Parkway, Hamden, Conn. 06514 .

265 Oceanport Ave., Oceanport, N.J. 07757

☐ 4747 North 16th St., Suite D120G, Phoenix, AZ 85016

TO SKF INDUSTRIES, INC.

ROLLER BEARINGS DIV.

P.O. BOX 70, W. KING ST.

SHIPPENSBURG, PA 17257

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

☐ **Shop Drawings**☐ **Prints**☐ **Plans**

☐ **Samples**

☐ Specifications

☐ **Copy of letter**☐ **Change order**☐[illegible]

THESE ARE TRANSMITTED as checked below:

☐ **For approval**☐ **Approved as submitted**☐ Resubmit____copies for approval

~~For your use~~

☐ **Approved as noted**☐ Submit _____ copies for distribution☐ **As requested**☐ Returned for corrections☐ Return _____ corrected prints☐ For review and comment☐

REMARKS FRANK, PLEASE REVIEW THE ATTACH. SKETCH SHOWING THE LOCATIONS OF SOIL SAMPLES TAKEN FOR THE CLOSURE PLAN. I SUGGEST WE ANALYZE SAMPLE NOS. 3, 6, 8 TO COMPLETE THE FOUR SAMPLE ANALYSES CALLED FOR IN THE PLAN. PLEASE LET ME KNOW YOUR THOUGHTS. THANKS.

TIM/10-15-85 - I THINK THIS IS A SATISFACTORY
APPROACH TO FINALIZE CLOSURE.

DISTRIBUTION

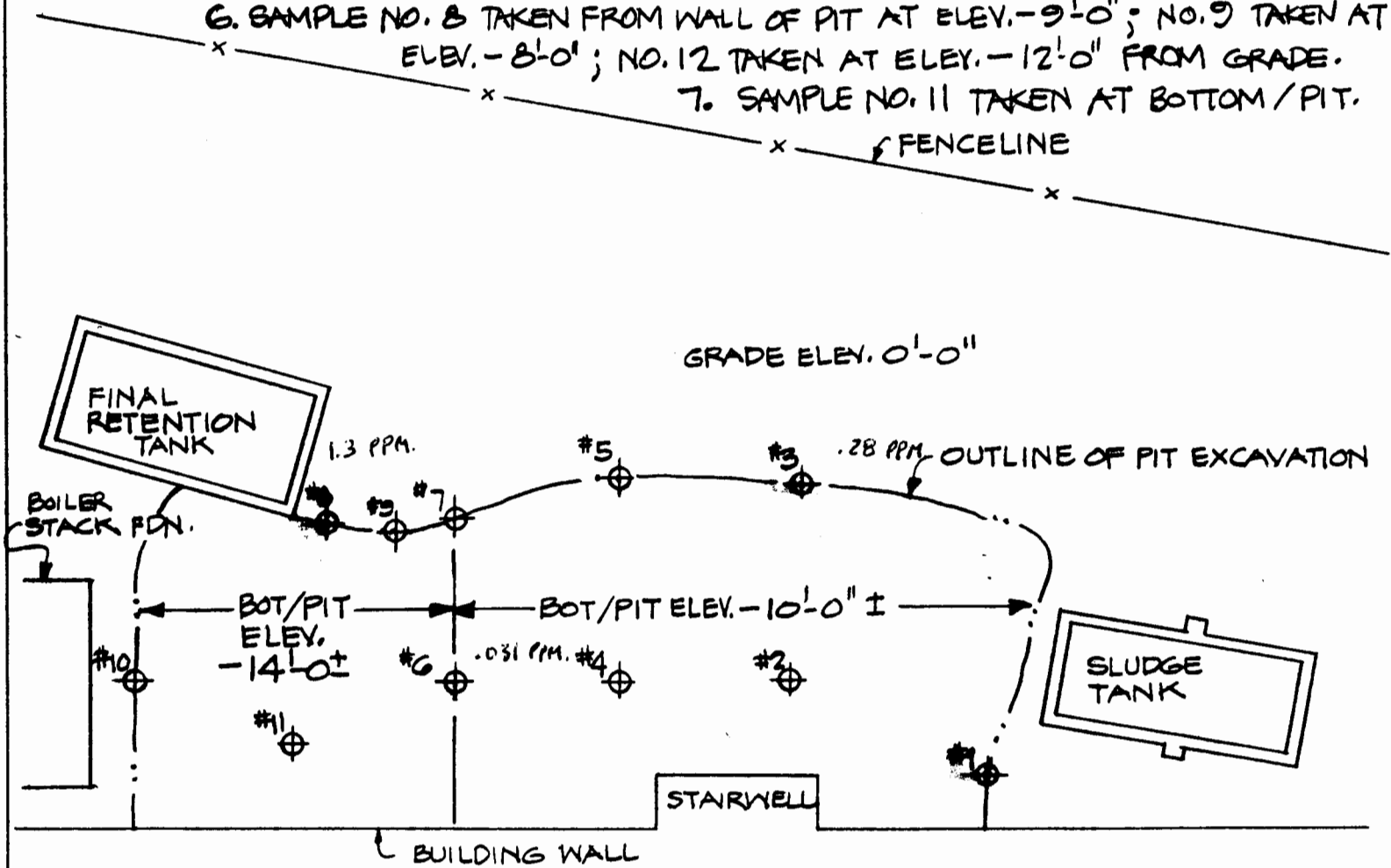
SIGNED:

PREPARED BY: T.A. HILL CLIENT: SKF INDUSTRIES
 CHECKED BY: _____ PROJECT NO.: _____
 DATE: 10/4/85 REV: 1 SHEET: 1 OF 1
 SUBJECT: LOCATION OF SOIL SAMPLES TAKEN BY LANCY INT. AT SKF IND., SHIPPENSBURG, PA.

LANCY
 International, Inc.

DRAWING NO.:

- NOTES:
1. #1 \oplus - INDICATES LOCATION OF LANCY SOIL SAMPLES.
 2. SAMPLE NOS. 1, 3, 5, 7 TAKEN FROM WALL OF PIT AT APPROX. EL. -7'-6".
 3. SAMPLE NOS. 2, 4, 6 TAKEN FROM BOTTOM OF PIT.
 4. SAMPLE NOS. 1, 2, 3, 4, 5, 6, 7 TAKEN ON 10/2/85
 5. SAMPLE NOS. 8, 9, 10, 11 TAKEN ON 10/8/85
 6. SAMPLE NO. 8 TAKEN FROM WALL OF PIT AT ELEV. -9'-0"; NO. 9 TAKEN AT ELEV. -8'-0"; NO. 12 TAKEN AT ELEV. -12'-0" FROM GRADE.
 7. SAMPLE NO. 11 TAKEN AT BOTTOM / PIT.



PLAN
NO SCALE

The design concepts and information contained herein are proprietary to Lancy International, Inc., and are submitted in confidence. They are not to be transferred and must be used only for the project for which the information was prepared. They must not be disclosed, reproduced, or otherwise used in any manner detrimental to the interest of Lancy International, Inc. All Rights are reserved unless specifically assigned in writing.

ANALYSIS REPORT



**LANCY
LABORATORIES**

Division, Lancy International, Inc.
525 W. New Castle St., P.O. Box 490
Zelienople, Pennsylvania 16063

SKF Industries
West King Street
Shippensburg, PA 17257

Attention: Frank Bucceri

Report Date 10/7/85

Collected 10/2/85 by TH
Received 10/3/85 by LS
Analyzed 10/7/85 by FJR
No. of Samples 1
P.O. # 4-010022

Sludge Filter Bed Closure
Soil Sample

Sample #	1
Lab Reference #	<u>15810</u>
<u>Parameter</u>	(ug/Kg)
Trichloroethylene	850

Lans. S. Groe, Laboratory Supv. for C. John Ritzert

C. John Ritzert, Manager-Technical Services

SKF ROLLER BEARINGS DIVISION

SKF INDUSTRIES, INC.

October 4, 1985

Mr. Robert Benvin
Commonwealth of Pennsylvania
Department of Environmental Resources
Bureau of Solid Waste Management
One Ararat Boulevard
Harrisburg, PA 17110

Dear Mr. Benvin:

SKF Industries, Inc., will remove the remaining contaminated soil and finalize closure on Tuesday, October 8, 1985.

At present soil has been removed and disposed to a depth of 12 to 15 feet. At this depth the soil was determined by PADER to be acceptable. Today, an additional one foot of soil was removed from the bottom and sides of the approved area of excavation and stockpiled with soil to be disposed 10/8/85.

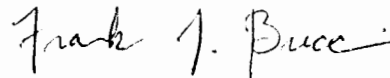
The approved area of excavation was then backfilled using shale and compacting it in layers. This was required to support existing structures, avoid the undermining of footings, and allow for access to the remaining contaminated soil.

The procedure SKF Industries will follow is to remove the remaining contaminated soil using the HNU meter. A value of 20 ppm on the HNU meter was determined by PADER to be the guide to soil removal. The decision of this value by PADER was based on the correlation of HNU meter readings to laboratory analysis.

SKF Industries, Inc., will have the Registered Professional Engineer on site 10/8/85 to approve final closure activities and certify closure.

If you have any questions, please call me.

Sincerely,



Frank J. Bucceri
Plant Engineer

ch

Lab Number *ORG - 4520*

Date Received

SHIPMENT			CASE			FACILITY			COLL NUMBER										
COUNTY			MUNICIPALITY			PROGRAM			COLL NAME/PHONE NUMBER			TYPE TR			STD ANALYSIS				
FACILITY			SHIPMENT			NAME			STATION			DATE			ANALYSIS				
CARD (3)		ID CODE (ALL CARDS) 4-16					LATITUDE 4-10			LONGITUDE 11-18			DATE 19-24			TIME 25-28		KIND 29	
1		Cnty	Mun	T	Est	Case	Fac.							M	D	Y	Hr	Min	
2								0						10/1/85					
USGS Q 30 34			BUREAU 35-37 AMIS			SAMPLE NUMBER 38-43			STREAM NAME 44-57			RELATIVE POINT 58							
300			300			300			300			300							

FULL DESCRIPTION WHERE SAMPLE TAKEN:

ADDITIONAL LAB ANALYSES

CUSTODY LOG

How Shipped

Date _____

Legal Seal No.

Received by:

Legal Seal Condition:

QUALITATIVE REPORT

DO NOT WRITE BELOW THIS LINE

QUANTITATIVE RESULTS

ANALYSIS:

UNITS:**ANALYSIS CODE**

RESULTS
(SHOW DECIMAL POINTS ON LINES)

[illegible]

ANALYST,

SIGNATURE

DATE _____

DATE _____

FULL DESCRIPTION WHERE SAMPLE TAKEN:		ADDITIONAL LAB ANALYSES	
CUSTODY LOG			
How Shipped	Date		
Legal Seal No.			
Received by:			
Legal Seal Condition:	QUALITATIVE REPORT		

DO NOT WRITE BELOW THIS LINE

QUANTITATIVE RESULTS

[illegible]

ANALYST

SIGNATURE

DATE _____

**ANALYSIS REPORT**08:38:32 106891
WLK212 D 2 5*Lancaster Laboratories* INCORPORATED

LLI Sample No. WW 1021370

S.K.F. Industries
West King Street
Shippensburg, PA 17257Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #4 Collected 10/08/85 by NHI

	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Volatiles in Groundwater				
Benzene	< 1. ppb		1.	07030000N
Toluene	< 1. ppb		1.	07040000N
Chlorobenzene	< 1. ppb		1.	07050000N
Ethylbenzene	< 1. ppb		1.	07060000N
Chloromethane	< 5. ppb		5.	07110000N
Bromomethane	< 5. ppb		5.	07120000N
2-Chloroethylvinyl ether	< 10. ppb		10.	07130000N
Vinyl chloride	< 1. ppb		1.	07140000N
Chloroethane	< 1. ppb		1.	07150000N
Methylene chloride	< 1. ppb		1.	07160000N
1,1-Dichloroethene	< 1. ppb		1.	07170000N
1,1-Dichloroethane	< 1. ppb		1.	07180000N
trans-1,2-Dichloroethene	< 1. ppb		1.	07190000N
Chloroform	< 1. ppb		1.	07200000N
1,2-Dichloroethane	< 1. ppb		1.	07210000N
1,1,1-Trichloroethane	< 1. ppb		1.	07220000N
Carbon tetrachloride	< 1. ppb		1.	07230000N
Dichlorobromomethane	< 1. ppb		1.	07240000N
1,2-Dichloropropane	< 1. ppb		1.	07250000N
trans-1,3-Dichloropropene	< 1. ppb		1.	07260000N
Trichloroethene	< 1. ppb		1.	07270000N
Dibromochloromethane	< 1. ppb		1.	07280000N
1,1,2-Trichloroethane	< 1. ppb		1.	07290000N
cis-1,3-Dichloropropene	< 1. ppb		1.	07300000N
Bromoform	< 2. ppb		2.	07310000N
1,1,2,2-Tetrachloroethane	< 2. ppb		2.	07320000N
Tetrachloroethene	< 1. ppb		1.	07330000N

2 COPIES TO S.K.F. Industries

ATTN: F. Bucceri

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

The American Association for
Laboratory Accreditation
Chemical & Biological fields of testingMAIN LABORATORY
2425 New Holland Pike Lancaster Pa 17601 • (717) 656-2301FRANKLIN DIVISION
5424 Buchanan Trail East Waynesboro Pa 17268 • (717) 762-9121Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:Richard C. Entz, B.A.
Group Leader, Organic Analysis



ANALYSIS REPORT 08:38:37 106891
WLK212 D 2 5

Lancaster Laboratories

INCORPORATED

LLI Sample No. WW 1021371

S.K.F. Industries
West King Street
Shippensburg, PA 17257

Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #5 Collected 10/08/85 by NHI

ANALYSIS	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Chloride	20.	mg/l	4.	022401000
Sulfate	30.	mg/l	10.	022801300
Metals in Water		attached		051309000
Volatiles in Groundwater		attached		051510000

2 COPIES TO S.K.F. Industries ATTN: F. Bucceri

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

The American Association for
Laboratory Accreditation
Chemical & Biological fields of testing

01898 0.00 021300



Member American Council of
Independent Laboratories, Inc.

MAIN LABORATORY
2425 New Holland Pike. Lancaster Pa. 17601 • (717) 656-2301

FRANKLIN DIVISION
5424 Buchanan Trail East Waynesboro Pa. 17268 • (717) 762-9127

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysis

**ANALYSIS REPORT**08:38:38 106891
WLK212 D 2 5*Lancaster Laboratories* INCORPORATED

LLI Sample No. WW 1021371

S.K.F. Industries
West King Street
Shippensburg, PA 17257Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #5 Collected 10/08/85 by NHI

	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Metals in Water				
Aluminum	0.2	mg/l	0.1	07580000N
Barium	0.051	mg/l	0.005	07590000N
Calcium	90.5	mg/l	0.05	07650000N
Cadmium	< 0.005	mg/l	0.005	07660000N
Chromium	< 0.05	mg/l	0.05	07670000N
Copper	< 0.05	mg/l	0.05	07690000N
Iron	0.20	mg/l	0.05	07700000N
Lead	< 0.05	mg/l	0.05	07710000N
Magnesium	15.9	mg/l	0.05	07730000N
Manganese	< 0.005	mg/l	0.005	07740000N
Molybdenum	< 0.05	mg/l	0.05	07750000N
Nickel	< 0.05	mg/l	0.05	07760000N
Potassium	2.1	mg/l	0.5	07780000N
Silver	< 0.05	mg/l	0.05	07820000N
Sodium	7.4	mg/l	0.5	07830000N
Zinc	< 0.05	mg/l	0.05	07890000N

2 COPIES TO S.K.F. Industries

ATTN: F. Bucceri

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

The American Association for
Laboratory Accreditation
Chemical & Biological fields of testingMAIN LABORATORY
2425 New Holland Pike, Lancaster, Pa 17601 • (717) 656-2301FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa 17268 • (717) 762-9127Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:Lee A. Seats, B.S. Group Ldr.
Inorganic Analysis



ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

08:38:42 106891
WLK212 D 2 5

S.K.F. Industries
West King Street
Shippensburg, PA 17257

LLI Sample No. WW 1021371

Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #5 Collected 10/08/85 by NHI

	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Volatiles in Groundwater				
Benzene	< 1. ppb		1.	07030000N
Toluene	< 1. ppb		1.	07040000N
Chlorobenzene	< 1. ppb		1.	07050000N
Ethylbenzene	< 1. ppb		1.	07060000N
Chloromethane	< 5. ppb		5.	07110000N
Bromomethane	< 5. ppb		5.	07120000N
2-Chloroethylvinyl ether	< 10. ppb		10.	07130000N
Vinyl chloride	< 1. ppb		1.	07140000N
Chloroethane	< 1. ppb		1.	07150000N
Methylene chloride	< 1. ppb		1.	07160000N
1,1-Dichloroethene	< 1. ppb		1.	07170000N
1,1-Dichloroethane	< 1. ppb		1.	07180000N
trans-1,2-Dichloroethene	< 1. ppb		1.	07190000N
Chloroform	1. ppb		1.	07200000N
1,2-Dichloroethane	< 1. ppb		1.	07210000N
1,1,1-Trichloroethane	< 1. ppb		1.	07220000N
Carbon tetrachloride	< 1. ppb		1.	07230000N
Dichlorobromomethane	< 1. ppb		1.	07240000N
1,2-Dichloropropane	< 1. ppb		1.	07250000N
trans-1,3-Dichloropropene	< 1. ppb		1.	07260000N
Trichloroethene	< 1. ppb		1.	07270000N
Dibromochloromethane	< 1. ppb		1.	07280000N
1,1,2-Trichloroethane	< 1. ppb		1.	07290000N
cis-1,3-Dichloropropene	< 1. ppb		1.	07300000N
Bromoform	< 2. ppb		2.	07310000N
1,1,2,2-Tetrachloroethane	< 2. ppb		2.	07320000N
Tetrachloroethene	< 1. ppb		1.	07330000N

2 COPIES TO S.K.F. Industries

ATTN: F. Bucceri

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

The American Association for
Laboratory Accreditation
Chemical & Biological fields of testing



Member American Council of
Independent Laboratories, Inc.

MAIN LABORATORY
2425 New Holland Pike, Lancaster, Pa. 17601 • (717) 656-2301

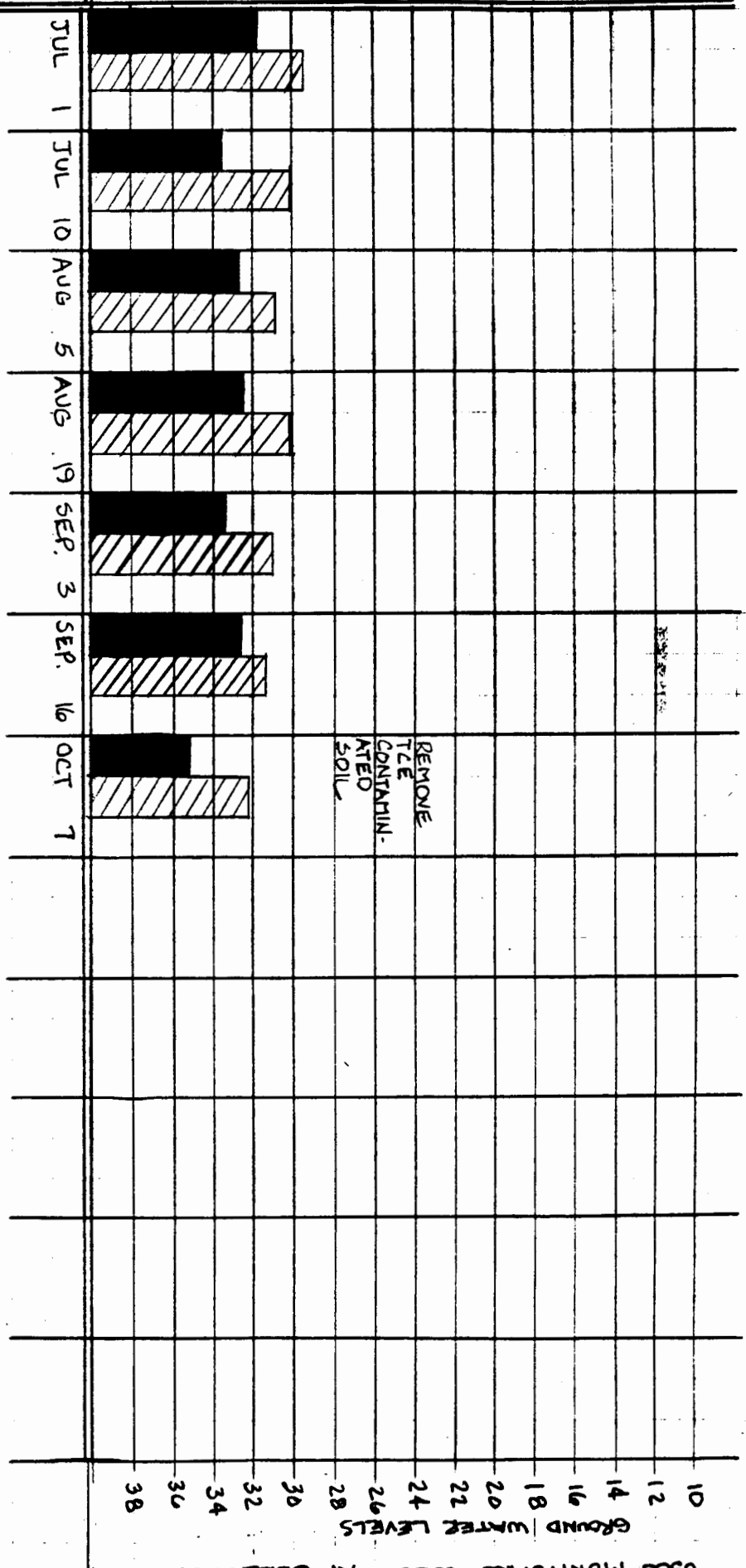
FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa. 17268 • (717) 762-9127

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysis

TCE (PPB)

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30



REMOVE
TCE
CONTAMIN-
ATED
SOIL

1985

GROUNDWATER MONITORING PROGRAM TCE.

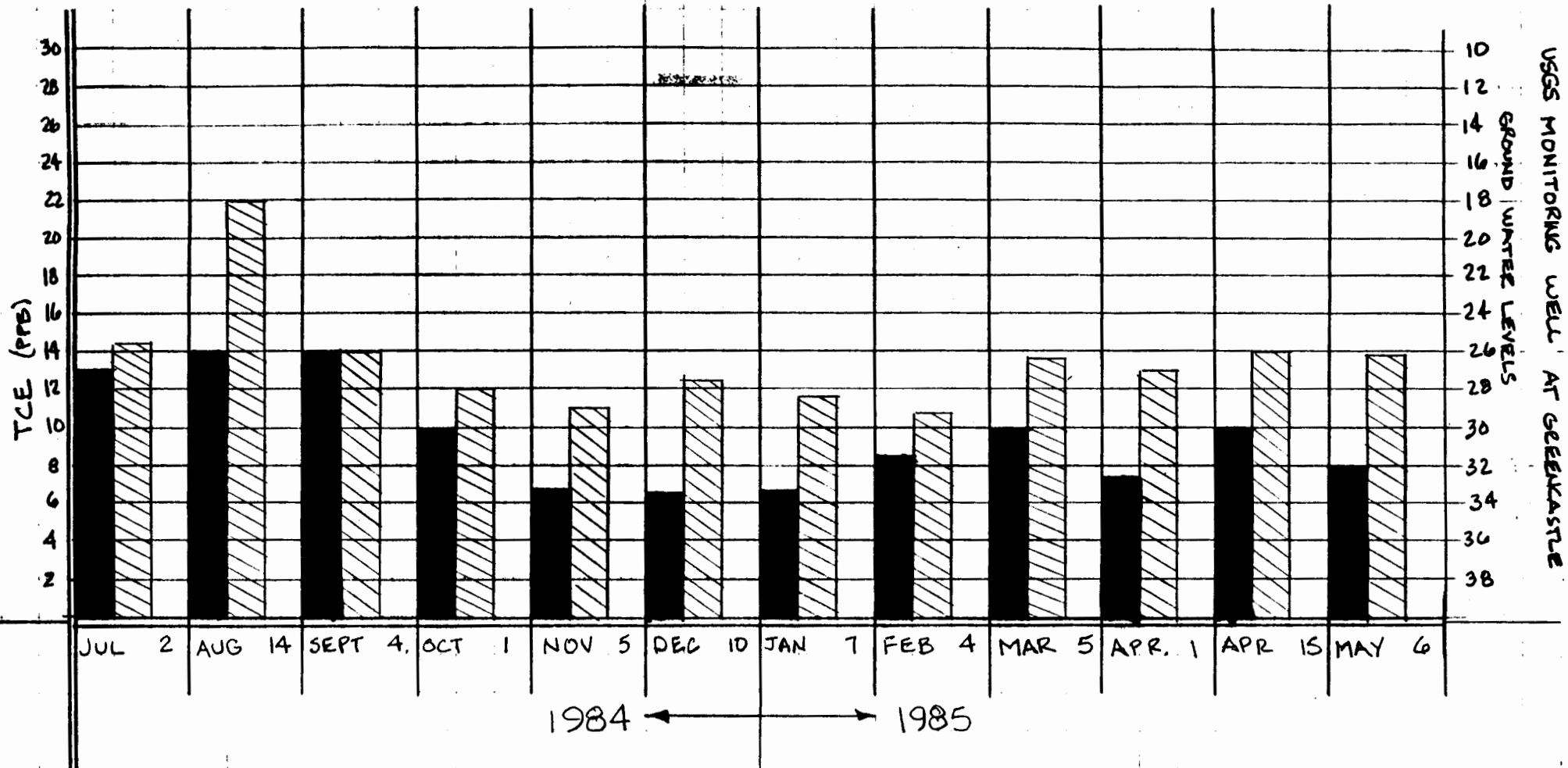
SKF INDUSTRIES INC.
P.O. BOX 70, WEST KING ST.
SHIP USBURG, PA. 17257

LANCASTER LABORATORY DATA ONLY.

USGS MONITORING WELL AT GEOKASTRE

GROUND WATER LEVELS

10 12 14 16 18 20 22 24 26 28 30 32 34 36 38



GROUNDWATER MONITORING PROGRAM TCE.

SKF INDUSTRIES INC.
P.O. BOX 70, WEST KING ST.
SHIPPENSBURG, PA. 17257

LANCASTER LABRATORY DATA ONLY.

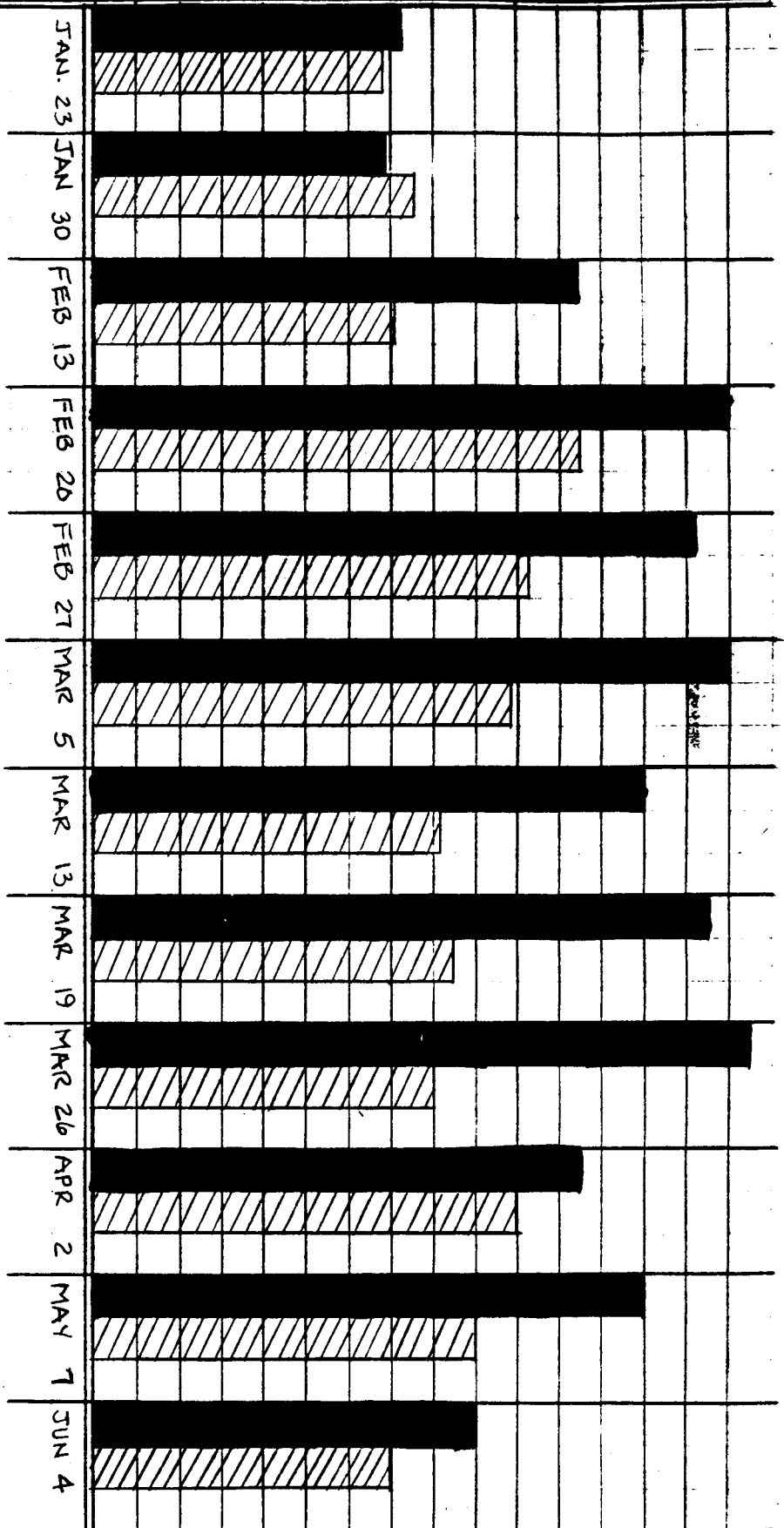
USGS MONITORING WELL AT GEEKCASTLE

GROUND WATER LEVELS

10 12 14 16 18 20 22 24 26 28 30 32 34 36 38

30 28 26 24 22 20 18 16 14 12 10 8 6 4 2

TCE (PPB)



1984

GROUNDWATER MONITORING PROGRAM TCE.

SKF INDUSTRIES INC.
P.O. BOX 70, WEST KING ST.
SHIP, SEBORG, OH. 44871
LANCASTER LABORATORY DATA ONLY.

ANALYSIS REPORT



**LANCY
LABORATORIES**

Division, Lancy International, Inc.
525 W. New Castle St., P.O. Box 490
Zellienople, Pennsylvania 16063

SKF Roller Bearings
West King Street
Shippensburg, PA 17257

Attention: Frank Bucceri

Report Date 10/31/85

Collected 10/8/85 by N-H, Inc.
Received 10/9/85 by LS
Analyzed 10/9 - 10/29/85 by Staff
No. of Samples 5
P.O. # 4-009530

Well Samples

Well #	1	2	3	4	5
Lab Reference #	<u>15910</u> (ug/L)	<u>15911</u> (ug/L)	<u>15912</u> (ug/L)	<u>15913</u> (ug/L)	<u>15914</u> (ug/L)
Parameter					
Trichloroethylene	2.0	<2.0	<2.0	<2.0	2.1
Perchloroethylene	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroform	<2.0	80	<2.0	<2.0	4.1

John S. Ritzert, Laboratory Supervisor for C. J. Ritzert
C. John Ritzert, Manager-Technical Services

Analyze samples for TCE

2 samples taken from - Well #1 15910

" " #2 15911

" " #3 15912

" " #4 15913

" " #5 15914

LANCY LABORATORIES

CHAIN OF CUSTODY RECORD

Company SKF IND.

Permit No. _____

Street _____

Discharge No. _____

City-State SHIPPENSBURG, PA

SIC No. _____

Telephone () _____

Production Hours _____

FRANK BUCCERI 717-530-1111

Time of Sampling	Sample Type	Flow (GPM/GPD)	pH	Temperature F

Sample Preservation	
STABILIZER	BOTTLE CODE
None	AA, JI
NaOH	EB, FB
HNO ₃	BC, BL
H ₂ SO ₄	ID, HD, GD
H ₂ SO ₄ & CuSO ₄	GG
Na ₂ S ₂ O ₃	BF, GF
HNO ₃ & K ₂ Cr ₂ O ₇	BH HM
Na ₂ S ₂ O ₃ & H ₂ SO ₄	GE CI CH

4°C

CAUTION - Stabilizing reagents are corrosive and should be handled carefully. If reagents come in contact with skin, flush with water.

Sample Taken By NASSAU-HEMISLEY, INC. Date 10/8/85

Supervisor _____

Date _____

Date Shipped 10/8/85

Date Received 10/9/85

Custodian T.A. Hill

Date of Report 10/31/85

Analyst JL Inou for C.J.R. Gent

Date of Analysis 10/9-10/29/85

Ship to:

Lancy Laboratories
525 West New Castle St.
Zelienople, PA 16063

Tim did not take these samples or witness them being taken. These are supposedly well samples

SKF ROLLER BEARINGS DIVISION
SKF INDUSTRIES, INC.

November 18, 1985

Mr. Robert G. Benvin
Commonwealth of Pennsylvania
Department of Environmental Resources
Bureau of Solid Waste Management
One Ararat Boulevard
Harrisburg, PA 17110

SUBJECT: SKF CLOSURE PLAN & STUDY OF GROUNDWATER CONTAMINATION
SHIPPENSBURG FACILITY - I.D. NO. PAD 003026606 - FRANKLIN COUNTY

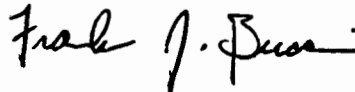
Dear Mr. Benvin:

Please find enclosed an Addendum to the October 1984 Ground Water Study. I hope that this document answers questions addressed to SKF in your March 5, 1985, letter.

Based on the information in this addendum, quarterly analysis of the five monitoring wells for trichlorethylene and Chloroform should be sufficient until such a time as specified in the Addendum to Closure Plan.

If you have any questions pertaining to the above Addendum or planned analysis for ground water monitoring, please contact me.

Sincerely,



Frank J. Bucceri
Plant Engineer

ch

cc: J. Roback
T. Taylor
B. McGlocklin

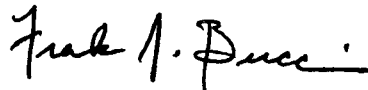
INTER-OFFICE LETTER

DATE: November 18, 1985
TO: Bill McGlocklin
FROM: Frank Bucceri
SUBJECT: Ground Water Study

COPIES TO:

Enclosed is a copy of an Addendum to the October 1984
Ground Water Study and a letter of submission to PADER.
Please review this with Tim Gifford and contact me
with your comments.

Thanks,

A handwritten signature in cursive script, reading "Frank J. Bucceri".

Frank J. Bucceri

SKF ROLLER BEARING DIVISION
SKF INDUSTRIES
SHIPPENSBURG, PENNSYLVANIA

ADDENDUM TO THE
OCTOBER 1984
GROUND WATER STUDY

-PRELIMINARY-

PREPARED BY:
NASSAUX-HEMSLEY, INCORPORATED
56 NORTH SECOND STREET
CHAMBERSBURG, PENNSYLVANIA

NOVEMBER 1985

INTRODUCTION

In October 1984, Nassaux-Hemsley, Incorporated completed a study of the source and extent of TCE contamination of ground water at the Shippensburg Plant of the SKF Roller Bearings Division of SKF Industries. In a March 5, 1985, letter, Mr. Robert Benveniste, of the Pennsylvania Department of Environmental Resources (PaDER), presented four (4) concerns about the study, which are addressed by this Addendum to the original report.

ADDITIONAL SAMPLING

To answer the concerns raised by PaDER, the five (5) monitoring wells installed for the original ground water study were pumped and sampled on October 8, 1985. These samples were analyzed by Lancaster Laboratories for 27 volatile organics, 16 metals, and the key anions Chloride and Sulfate. Electrical conductivity (E.C.) was also measured in the field. These data are summarized on the following table and the laboratory reports are included at the end of this Addendum.

DISCUSSION

The original study centered on TCE. The clean-up program instituted at the Shippensburg Plant has included installation of an air-stripping tower prior to the cooling water injection well and removal of contaminated soil. This program has been effective as TCE was not detected by Lancaster Labs at any of the five (5) monitoring wells. Continued monitoring through future major recharge episodes will determine if all significantly

contaminated soil has been removed. If it has, wet weather should not bring about a reoccurrence of significant TCE in ground water.

The detailed sampling conducted for this Addendum disclosed only the Trihalomethanes Chloroform (Trichloromethane) and Dichlorobromomethane in ground water. These two constituents were found at levels of 71 ppb and 2 ppb at MW2, while only Chloroform was found at 1 ppb at Well MW1. SKF uses Chlorine in its wastewater treatment process and is clearly a potential source of Chloroform and the other Trihalomethane as well. Chloroform was detected in the contaminated soil in the sludge bed area. However, MW2 is, by virtue of high water level, an upgradient well. In addition, MW2 exhibits gross inorganic chemistry which is significantly different than the other wells. Specifically, E.C., Calcium, and Magnesium are lower at MW2 which indicates that it is in a different zone of water quality than the other wells. It is, therefore, not clear as to whether or not the elevated Chloroform in MW2 is related to on-site or to upgradient activities.

However, with an MCL for Chloroform of 100 ppb, and with Chloroform ubiquitous in public drinking water supplies, a concentration of 71 ppb at MW2 is not exciting.

Continued monitoring will determine whether or not further investigation of the source of the Chloroform in MW2 is warranted.

The analyses disclosed elevated Chloride and Sulfate in down-gradient well MW1. This explains the anomalously high E.C. at MW1 noted in the original report and discussed further in the next section of this Addendum. While the source for this is unclear, the levels are well within drinking water limits.

Metals detected above drinking water limits included Iron, Aluminum, and Manganese which were elevated only at MW1. Samples were field acidified for metals, but were not field filtered.

The sample from MW1 was turbid, and the Iron, Aluminum, and Manganese were probably stripped from suspended soil particles when the sample was acidified.

Sodium is somewhat elevated in MW1, and this is believed to be related to the elevated Chloride and Sulfate.

The overall water quality pattern at SKF Indicates that the past TCE problem is under control subject to continued monitoring. No other contaminants were found at levels high enough to warrant any action beyond continued monitoring.

SKF ROLLER BEARINGS DIVISION
SHIPPENSBURG
OCTOBER 8, 1985 WATER QUALITY SURVEY

PARAMETER	WELL #1	WELL #2	WELL #3	WELL #4	WELL #5	DRINKING WATER LIMIT
<u>METALS:</u>						
Aluminum	3.8*	0.3	0.4	0.1	0.2	N/A
Barium	0.063	0.011	0.033	0.033	0.051	1.0
Calcium	92.2	17.5	79.8	84.3	90.5	N/A
Cadmium	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01
Chromium	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.05
Copper	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	1.0
Iron	21.0*	0.30	2.94	0.27	0.20	0.3
Lead	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.05
Magnesium	19.1	3.26	17.5	15.3	15.9	N/A
Manganese	0.64*	0.005	0.019	< 0.005	< 0.005	0.05
Molybdenum	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	N/A
Nickel	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	N/A
Potassium	2.8	1.0	2.2	1.9	2.1	N/A
Silver	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.05
Sodium	13.9	4.8	3.8	3.4	7.4	N/A
Zinc	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	5.0
<u>KEY ANIONS:</u>						
Chloride	67	7	15	13	20	250
Sulfate	100	20	40	30	30	250
FIELD E.C.	811 859**	163	599	584	649	N/A
VOLATILES	All Below Detection Limits	71 ppb Chloroform 2 ppb Dichlorobromomethane	All Below Detection Limits	All Below Detection Limits	1 ppb Chloroform	< 100 ppb Trihalomethanes

*Samples were not field filtered, although they were acidified in the field. Well #1 produces turbid water and the anomalously high Aluminum, Iron, and Manganese is believed to have been stripped from suspended soil by the acid.

**Reading taken 10/13/85 of clear water after solids settled.

RESPONSES TO
PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES
MARCH 5, 1985 LETTER

PaDER QUESTION NUMBER 1:

Page 10 - Specific conductivity is a measure of the dissolved material in water. Turbidity in a well is usually the result of suspended or settleable solids. We do not understand how the turbidity of the water is causing the higher conductivity in MW1. Analysis of a rather complete suite of inorganic parameters would seem important to illuminate the cause of the higher conductivity. Also, the sample could be allowed to settle and then a conductivity reading taken of the clear portion to determine if there is a drop in conductivity. Because of the position of MW1 downgradient from the bulk of plant activities at SKF and also downgradient from the injection well, the possibility of some inorganic degradation of groundwater in the vicinity of the plant should not be dismissed lightly. More clarification is requested from the consultant.

RESPONSE:

Although our past experiences include cases where turbid water had somewhat higher conductivity than equivalent clear water, the additional data collected for this Addendum confirms that the higher conductivity of the water from MW1 is the result of higher dissolved solids and not turbidity. The turbid water had a conductivity of 811 micromhos/cm at the time of sampling while after five (5) days of settling time the clear water had essentially the same conductivity (859 micromhos/cm). MW1 yielded water with 67 mg/l Chloride and 100 mg/l Sulfate, while the other wells produced water with only 7-20 mg/l Chloride and 20-40 mg/l Sulfate.

Other than elevated Iron, Aluminum and Manganese, which were probably stripped from soil in the solids fraction by the acid fixative, no other parameters in MW1 are at a level of concern.

PaDER QUESTION NUMBER 2:

Pending the results of the sludge bed and soil clean-up, I would see nothing wrong with a well located at the exact area of the sludge beds to determine water quality directly beneath the sludge beds. Such a well could also be used as an observation well for a pumping test on the pumped well to ascertain to what extent the pumping is influencing drawdown in the vicinity of the sludge beds, the presumed source of contamination. If badly contaminated, this well could also be used as an additional recovery well. The pumping well is located quite close to the sludge beds, but because the limestone is potentially so anisotropic, there is some doubt that it reflects worse groundwater quality conditions. There is also a question whether the pumping well is acting optimally as a contamination recovery well. The consultant's comments are requested.

RESPONSE:

While drilling an additional well in the sludge bed area is appealing from a scientific standpoint, it could result in more harm than good if not carefully constructed. Improper grouting of the casing could result in a short-circuiting of shallow contaminants retained in the soil in this area into the bedrock aquifer.

While it is certainly possible to drill and construct such a well, it will be expensive. We, therefore, recommend resorting to this additional expense only if the existing clean-up program is not effective as determined by the peripheral network of monitoring wells.

PaDER QUESTION NUMBER 3:

What is the rationale for doing a rather complete suite of analyses downgradient of the plant at Spring Nos. 2, 3, 4, 5, and MW5; and doing only TCE at the plant site wells? There may be other organic contaminants (e.g. DCE) at the plant site which have lower drinking water standards than the TCE. Until the well is sampled for a more complete analysis of volatile organics, it may be erroneous to conclude that groundwater recovery is not needed or that simply limiting TCE contamination to 4.5 ppb or less constitutes adequate response to groundwater pollution abatement.

RESPONSE:

There was no rationale for this difference in analyses at certain sampling stations, the difference happened by accident. The laboratory was instructed to analyze for TCE in each set of samples. In the first set, they did analyze only for TCE, while in the second set consisting of Spring No. 2, 3, 4, 5, and MW5, they analyzed for an extensive list of volatiles despite the request to analyze only for TCE. As we had the more extensive data for some stations, we presented it in the original report rather than present only the data for TCE.

The scope-of-work for the original ground water study was approved by the Bureau of Water Quality Management. That scope included only analyses for TCE. The analyses for 27 volatile organics completed for this Addendum disclosed only the Trihalomethanes Chloroform (Trichloromethane) and Dichlorobromomethane in MW2 and MW5. TCE and the other 24 volatiles were below detection limits at all five monitoring wells.

PaDER QUESTION NUMBER 4:

The study does not establish with any certainty that recovery at the pumping well will contain and eventually recover all TCE contaminated groundwater. It appears likely that some groundwater contaminated above drinking water standards will not be recovered under the current proposal. Over 50% of the inferred area of groundwater contamination lies downgradient of the injection well and will likely be left to migrate downgradient. Dilution, dispersion, and perhaps some microbial decomposition would be relied upon to reduce this "unrecovered" portion of the contaminant plume to acceptable quality.

RESPONSE:

We agree. The original study contained a water table contour map which showed that the "plume" extended downgradient beyond the area of influence of the pumping well. In addition, the first paragraph on Page 12 of the original study stated "...significant recirculation from the injection well to the pumping well is not occurring". It is our opinion, however, that the pumping well is capturing most of the contaminated recharge from the old sludge bed area, due to the proximity of the well to these old beds.

Because of the relatively low level of TCE in ground water, the clean-up program did not call for wholesale ground water recovery, but only an airstripping tower to remove volatiles from the reinjected cooling water and removal of the source of the TCE, i.e. the contaminated soil. This program has been effective to date and has resulted in a reduction in TCE in all wells to below detection limits according to the October 1985, analysis by Lancaster Laboratories. Continued monitoring through major recharge episodes will determine whether or not all of the significantly contaminated soil has been removed.



**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES**

BUREAU OF SOLID WASTE MANAGEMENT

One Ararat Boulevard
Harrisburg, Pennsylvania 17110
(717) 657-4588

March 5, 1985



Mr. Thomas E. Taylor
Manufacturing Engineer Superintendent
SKF Roller Bearings Division
King Street (West)
Shippensburg, PA 17257

Re: SKF Closure Plan and Study of
Groundwater Contamination
Shippensburg Facility
I.D. No. PAD 003026606
Franklin County

Dear Mr. Taylor:

We have reviewed the Closure Plan and Groundwater Study which you submitted on November 1, 1984 and are providing the following comments:

A. Closure Plan:

1. Based on the results of analyses of samples collected by Joel Steigman on October 29, 1984, it is obvious that lateral migration of TCE has not been prevented by the clay soil. This is evidenced by the fact that the soil at a 4 foot depth (DER Sample No. 2313092) from the area adjacent to sludge bed No. 1 contains a high concentration of TCE (88 mg/kg). Also, the clay soil at a much shallower level is contaminated with TCE (DER Sample No. 2313093 - 1.6 mg/kg). Based on these two samples and composite samples 2, 3, and 4, analyzed by Lancy Laboratories, it appears that there has been extensive lateral migration of TCE on the site into surface and sub-surface soils.

The Lancy analysis of the composite soil sample taken from beneath the lagoons reveals a concentration of 215 mg/kg of TCE. According to the closure plan, a clay liner does exist beneath these lagoons, and no appreciable migration of TCE contamination to levels beneath the liner is anticipated. Soil sampling and analysis should be performed to confirm this. Generally, clay liners have little or no effect on migration of organic solvents such as TCE.

Before the contamination at this site can be satisfactorily remedied, the extent of TCE contamination in the soil should be addressed with respect to depth (vertical migration) and area (lateral migration). TCE contamination appears to be much more extensive than the closure plan reveals. Excavation of only 3 feet of soil from under the filter beds is not acceptable.

Using MEGs methodology, the estimated permissible concentration for TCE is 5.6 mcg/kg in soil. This is based on the 10^{-6} cancer risk level of TCE listed in EPA's Priority Pollutant Water Quality Criteria.

2. According to Page 17 of the closure plan, contamination of soil is defined as TCE concentrations in the soil exceeding 300 mcg/kg. This is based on the TCE concentration in the background sample of 280 mcg/kg. TCE is not a naturally occurring compound; therefore, true background should indicate a level less than detection. A level of 280 mcg/kg of TCE in the soil indicates that there is contamination in the soil. Assuming no sampling or laboratory error has been made, this means that the background soil has been contaminated possibly by lateral migration from the filter beds or by some other means. Again, contamination may be more extensive than believed. This should be addressed.
3. Appendix A indicates that sample 1 from under the filter beds is contaminated with perchloroethylene (4670 mcg/kg) and chloroform (980 mcg/kg) in addition to trichloroethylene (215 mg/kg). These two contaminants have not been addressed.
4. Verification sampling of soil after excavation of the filter beds and underlying soil should include trichloroethylene, perchloroethylene and chloroform.

B. Groundwater Study:

1. Page 10 - Specific conductivity is a measure of the dissolved material in water. Turbidity in a well is usually the result of suspended or settleable solids. We do not understand how the turbidity of the water is causing the higher conductivity in MW-1. Analysis of a rather complete suite of inorganic parameters would seem important to illuminate the cause of the higher conductivity. Also, the sample could be allowed to settle and then a conductivity reading taken of the clear portion to determine if there is a drop in conductivity. Because of the position of MW-1 downgradient from the bulk of plant

activities at SKF and also downgradient from the injection well, the possibility of some inorganic degradation of groundwater in the vicinity of the plant should not be dismissed lightly. More clarification is requested from the consultant.

2. Pending the results of the sludge bed and soil clean-up, I would see nothing wrong with a well located at the exact area of the sludge beds to determine water quality directly beneath the sludge beds. Such a well could also be used as an observation well for a pumping test on the pumped well to ascertain to what extent the pumping is influencing drawdown in the vicinity of the sludge beds, the presumed source of contamination. If badly contaminated, this well could also be used as an additional recovery well. The pumping well is located quite close to the sludge beds, but because the limestone is potentially so anisotropic, there is some doubt that it reflects worse groundwater quality conditions. There is also a question whether the pumping well is acting optimally as a contamination recovery well. The consultant's comments are requested.
3. What is the rationale for doing a rather complete suite of analyses downgradient of the plant at Spring Nos. 2, 3, 4, 5, and MW-5; and doing only TCE at the plant site wells? There may be other organic contaminants (e.g. DCE) at the plant site which have lower drinking water standards than the TCE. Until the well is sampled for a more complete analysis of volatile organics, it may be erroneous to conclude that groundwater recovery is not needed or that simply limiting TCE contamination to 4.5 ppb or less constitutes adequate response to groundwater pollution abatement.
4. The study does not establish with any certainty that recovery at the pumping well will contain and eventually recover all TCE contaminated groundwater. It appears likely that some groundwater contaminated above drinking water standards will not be recovered under the current proposal. Over 50% of the inferred area of groundwater contamination lies downgradient of the injection well and will likely be left to migrate downgradient. Dilution, dispersion, and perhaps some microbial decomposition would be relied upon to reduce this "unrecovered" portion of the contaminant plume to acceptable quality.

Mr. Thomas E. Taylor

-4-

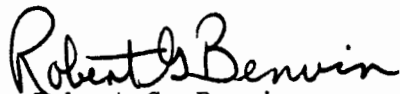
March 5, 1985

It appears from the review of the information submitted and the soil samples collected by the Department on October 29, 1984, that the sludge beds are responsible, at least in part, for the TCE contaminated groundwater.

When surface impoundments are closed and hazardous waste constituents remain in either the soil or groundwater, the impoundment must be closed as a landfill in conformance with all applicable landfill closure requirements. In addition, a Post-Closure application must be submitted to EPA and a Post-Closure Permit obtained. Post-Closure monitoring of the facility would also be a requirement. I would advise that you contact EPA, RCRA Permit Section Pat Anderson, Chief (3HW33), telephone (215) 597-9118 concerning specific requirements of a Post-Closure Permit.

Please review these comments and provide a response to this office within thirty (30) days of the receipt of this letter. If you have any questions or desire to meet with us concerning our review, please contact me.

Sincerely,



Robert G. Benvin
Facilities Supervisor
Harrisburg Regional Office

RGB:jvl

cc: U.S. Environmental Protection Agency



ANALYSIS REPORT 08:37:57 106891
WLK212 D 2 5

Lancaster Laboratories INCORPORATED

LLI Sample No. WW 1021367

S.K.F. Industries
West King Street
Shippensburg, PA 17257

Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #1 Collected 10/08/85 by NHI

ANALYSIS	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Chloride	67.	mg/l	4.	022401000
Sulfate	100.	mg/l	10.	022801300
Metals in Water		attached		051309000
Volatiles in Groundwater		attached		051510000

2 COPIES TO S.K.F. Industries

ATTN: F. Bucceri

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

01898 0.00 021300

The American Association for
Laboratory Accreditation
Chemical & Biological fields of testing



MAIN LABORATORY
2425 New Holland Pike, Lancaster, Pa 17601 • (717) 656-2301

FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa 17268 • (717) 762-9127

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysis



ANALYSIS REPORT 08:37:58 106891
WLK212 D 2 5

Lancaster Laboratories

INCORPORATED

LLI Sample No. WW 1021367

S.K.F. Industries
West King Street
Shippensburg, PA 17257

Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #1 Collected 10/08/85 by NHI

Metals in Water	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Aluminum	3.8	mg/l	0.1	07580000N
Barium	0.063	mg/l	0.005	07590000N
Calcium	92.2	mg/l	0.05	07650000N
Cadmium	< 0.005	mg/l	0.005	07660000N
Chromium	< 0.05	mg/l	0.05	07670000N
Copper	< 0.05	mg/l	0.05	07690000N
Iron	21.0	mg/l	0.05	07700000N
Lead	< 0.05	mg/l	0.05	07710000N
Magnesium	19.1	mg/l	0.05	07730000N
Manganese	0.640	mg/l	0.005	07740000N
Molybdenum	< 0.05	mg/l	0.05	07750000N
Nickel	< 0.05	mg/l	0.05	07760000N
Potassium	2.8	mg/l	0.5	07780000N
Silver	< 0.05	mg/l	0.05	07820000N
Sodium	13.9	mg/l	0.5	07830000N
Zinc	< 0.05	mg/l	0.05	07890000N

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5424 Buchanan Trail East, Waynesboro, Pa 17268 • (717) 762-9127

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Lee A. Seats, B.S. Group Ldr.
Inorganic Analysis

*Lancaster Laboratories* INCORPORATED

LLI Sample No. WW 1021367

S.K.F. Industries
West King Street
Shippensburg, PA 17257Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #1 Collected 10/08/85 by NHI

	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Volatiles in Groundwater				
Benzene	< 1. ppb		1.	07030000N
Toluene	< 1. ppb		1.	07040000N
Chlorobenzene	< 1. ppb		1.	07050000N
Ethylbenzene	< 1. ppb		1.	07060000N
Chloromethane	< 5. ppb		5.	07110000N
Bromomethane	< 5. ppb		5.	07120000N
2-Chloroethylvinyl ether	< 10. ppb		10.	07130000N
Vinyl chloride	< 1. ppb		1.	07140000N
Chloroethane	< 1. ppb		1.	07150000N
Methylene chloride	< 1. ppb		1.	07160000N
1,1-Dichloroethene	< 1. ppb		1.	07170000N
1,1-Dichloroethane	< 1. ppb		1.	07180000N
trans-1,2-Dichloroethene	< 1. ppb		1.	07190000N
Chloroform	< 1. ppb		1.	07200000N
1,2-Dichloroethane	< 1. ppb		1.	07210000N
1,1,1-Trichloroethane	< 1. ppb		1.	07220000N
Carbon tetrachloride	< 1. ppb		1.	07230000N
Dichlorobromomethane	< 1. ppb		1.	07240000N
1,2-Dichloropropane	< 1. ppb		1.	07250000N
trans-1,3-Dichloropropene	< 1. ppb		1.	07260000N
Trichloroethene	< 1. ppb		1.	07270000N
Dibromochloromethane	< 1. ppb		1.	07280000N
1,1,2-Trichloroethane	< 1. ppb		1.	07290000N
cis-1,3-Dichloropropene	< 1. ppb		1.	07300000N
Bromoform	< 2. ppb		2.	07310000N
1,1,2,2-Tetrachloroethane	< 2. ppb		2.	07320000N
Tetrachloroethene	< 1. ppb		1.	07330000N

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5424 Buchanan Trail East, Waynesboro, Pa 17268 • (717) 762-9127Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:Richard C. Entz, B.A.
Group Leader, Organic Analysis



Lancaster Laboratories INCORPORATED LLI Sample No. WW 1021368

S.K.F. Industries
West King Street
Shippensburg, PA 17257

Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #2 Collected 10/08/85 by NHI

ANALYSIS

Chloride
Sulfate
Metals in Water
Volatiles in Groundwater

RESULT
AS RECEIVED

7. mg/l
20. mg/l
attached
attached

LIMIT OF
DETECTION

4.
10.

LAB CODE

022401000
022801300
051309000
051510000

2 COPIES TO S.K.F. Industries

ATTN: F. Bucceri

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Chemical & Biological fields of testing

01898 0.00 021300



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FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa. 17268 • (717) 262-9127

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysis



Lancaster Laboratories

INCORPORATED

LLI Sample No. WW 1021368

S.K.F. Industries
West King Street
Shippensburg, PA 17257

Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #2 Collected 10/08/85 by NHI

	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Metals in Water				
Aluminum	0.3	mg/l	0.1	07580000N
Barium	0.011	mg/l	0.005	07590000N
Calcium	17.5	mg/l	0.05	07650000N
Cadmium	< 0.005	mg/l	0.005	07660000N
Chromium	< 0.05	mg/l	0.05	07670000N
Copper	< 0.05	mg/l	0.05	07690000N
Iron	0.30	mg/l	0.05	07700000N
Lead	< 0.05	mg/l	0.05	07710000N
Magnesium	3.26	mg/l	0.05	07730000N
Manganese	< 0.005	mg/l	0.005	07740000N
Molybdenum	< 0.05	mg/l	0.05	07750000N
Nickel	< 0.05	mg/l	0.05	07760000N
Potassium	1.0	mg/l	0.5	07780000N
Silver	< 0.05	mg/l	0.05	07820000N
Sodium	4.8	mg/l	0.5	07830000N
Zinc	< 0.05	mg/l	0.05	07890000N

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Lee A. Seats, B.S. Group Ldr.
Inorganic Analysis



ANALYSIS REPORT 08:38:11 106891
WLK212 D 2 5

Lancaster Laboratories

INCORPORATED

LLI Sample No. WW 1021368

S.K.F. Industries
West King Street
Shippensburg, PA 17257

Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #2 Collected 10/08/85 by NHI

	RESULT		LIMIT OF	LAB CODE
	AS RECEIVED		DETECTION	
Volatiles in Groundwater				
Benzene	< 1. ppb		1.	07030000N
Toluene	< 1. ppb		1.	07040000N
Chlorobenzene	< 1. ppb		1.	07050000N
Ethylbenzene	< 1. ppb		1.	07060000N
Chloromethane	< 5. ppb		5.	07110000N
Bromomethane	< 5. ppb		5.	07120000N
2-Chloroethylvinyl ether	< 10. ppb		10.	07130000N
Vinyl chloride	< 1. ppb		1.	07140000N
Chloroethane	< 1. ppb		1.	07150000N
Methylene chloride	< 1. ppb		1.	07160000N
1,1-Dichloroethene	< 1. ppb		1.	07170000N
1,1-Dichloroethane	< 1. ppb		1.	07180000N
trans-1,2-Dichloroethene	< 1. ppb		1.	07190000N
Chloroform	71. ppb		1.	07200000N
1,2-Dichloroethane	< 1. ppb		1.	07210000N
1,1,1-Trichloroethane	< 1. ppb		1.	07220000N
Carbon tetrachloride	< 1. ppb		1.	07230000N
Dichlorobromomethane	2. ppb		1.	07240000N
1,2-Dichloropropane	< 1. ppb		1.	07250000N
trans-1,3-Dichloropropene	< 1. ppb		1.	07260000N
Trichloroethene	< 1. ppb		1.	07270000N
Dibromochloromethane	< 1. ppb		1.	07280000N
1,1,2-Trichloroethane	< 1. ppb		1.	07290000N
cis-1,3-Dichloropropene	< 1. ppb		1.	07300000N
Bromoform	< 2. ppb		2.	07310000N
1,1,2,2-Tetrachloroethane	< 2. ppb		2.	07320000N
Tetrachloroethene	< 1. ppb		1.	07330000N

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ATTN: F. Bucceri

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FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa 17268 • (717) 662-9127

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysis



ANALYSIS REPORT 08:38:17 106891
WLK212 D 2 5

Lancaster Laboratories

INCORPORATED

LLI Sample No. WW 1021369

S.K.F. Industries
West King Street
Shippensburg, PA 17257

Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #3 Collected 10/08/85 by NHI

ANALYSIS

Chloride
Sulfate
Metals in Water
Volatiles in Groundwater

RESULT AS RECEIVED

15. mg/l
40. mg/l
attached
attached

LIMIT OF DETECTION

4.
10.

LAB CODE

022401000
022801300
051309000
051510000

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ATTN: F. Bucceri

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5424 Buchanan Trail East, Waynesboro, Pa 17268 • (717) 662-9127

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysis

**ANALYSIS REPORT** 08:38:18 106891

WLK212 D 2 5

Lancaster Laboratories INCORPORATED

S.K.F. Industries
West King Street
Shippensburg, PA 17257

LLI Sample No. WW 1021369

Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #3 Collected 10/08/85 by NHI

	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Metals in Water				
Aluminum	0.4	mg/l	0.1	07580000N
Barium	0.033	mg/l	0.005	07590000N
Calcium	79.8	mg/l	0.05	07650000N
Cadmium	< 0.005	mg/l	0.005	07660000N
Chromium	< 0.05	mg/l	0.05	07670000N
Copper	< 0.05	mg/l	0.05	07690000N
Iron	2.94	mg/l	0.05	07700000N
Lead	< 0.05	mg/l	0.05	07710000N
Magnesium	17.5	mg/l	0.05	07730000N
Manganese	0.019	mg/l	0.005	07740000N
Molybdenum	< 0.05	mg/l	0.05	07750000N
Nickel	< 0.05	mg/l	0.05	07760000N
Potassium	2.2	mg/l	0.5	07780000N
Silver	< 0.05	mg/l	0.05	07820000N
Sodium	3.8	mg/l	0.5	07830000N
Zinc	< 0.05	mg/l	0.05	07890000N

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ATTN: F. Bucceri

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5424 Buchanan Trail East Waynesboro, Pa 17268 • (717) 762-9127

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Lee A. Seats, B.S. Group Ldr.
Inorganic Analysis



ANALYSIS REPORT 08:38:22 106891
WLK212 D 2 5

Lancaster Laboratories

INCORPORATED

LLI Sample No. WW 1021369

S.K.F. Industries
West King Street
Shippensburg, PA 17257

Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #3 Collected 10/08/85 by NHI

	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Volatiles in Groundwater				
Benzene	< 1. ppb		1.	07030000N
Toluene	< 1. ppb		1.	07040000N
Chlorobenzene	< 1. ppb		1.	07050000N
Ethylbenzene	< 1. ppb		1.	07060000N
Chloromethane	< 5. ppb		5.	07110000N
Bromomethane	< 5. ppb		5.	07120000N
2-Chloroethylvinyl ether	< 10. ppb		10.	07130000N
Vinyl chloride	< 1. ppb		1.	07140000N
Chloroethane	< 1. ppb		1.	07150000N
Methylene chloride	< 1. ppb		1.	07160000N
1,1-Dichloroethene	< 1. ppb		1.	07170000N
1,1-Dichloroethane	< 1. ppb		1.	07180000N
trans-1,2-Dichloroethene	< 1. ppb		1.	07190000N
chloroform	< 1. ppb		1.	07200000N
1,2-Dichloroethane	< 1. ppb		1.	07210000N
1,1,1-Trichloroethane	< 1. ppb		1.	07220000N
Carbon tetrachloride	< 1. ppb		1.	07230000N
Dichlorobromomethane	< 1. ppb		1.	07240000N
1,2-Dichloropropane	< 1. ppb		1.	07250000N
trans-1,3-Dichloropropene	< 1. ppb		1.	07260000N
Trichloroethene	< 1. ppb		1.	07270000N
Dibromochloromethane	< 1. ppb		1.	07280000N
1,1,2-Trichloroethane	< 1. ppb		1.	07290000N
cis-1,3-Dichloropropene	< 1. ppb		1.	07300000N
Bromoform	< 2. ppb		2.	07310000N
1,1,2,2-Tetrachloroethane	< 2. ppb		2.	07320000N
Tetrachloroethene	< 1. ppb		1.	07330000N

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ATTN: ~F. Bucceri

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FRANKLIN DIVISION
5424 Buchanan Trail East Waynesboro Pa 17268 • (717) 762-9127

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysis



ANALYSIS REPORT 08:38:27 106891
WLK212 D 2 5

Lancaster Laboratories

INCORPORATED

LLI Sample No. WW 1021370

S.K.F. Industries
West King Street
Shippensburg, PA 17257

Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #4 Collected 10/08/85 by NHI

ANALYSIS	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Chloride	13.	mg/l	4.	022401000
Sulfate	30.	mg/l	10.	022801300
Metals in Water		attached		051309000
Volatiles in Groundwater		attached		051510000

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ATTN: F. Bucceri

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FRANKLIN DIVISION
5424 Buchanan Trail East Waynesboro Pa 17268 • (717) 762-9127

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysis



ANALYSIS REPORT

08:38:28 106891
WLK212 D 2 5

Lancaster Laboratories

INCORPORATED

LLI Sample No. WW 1021370

S.K.F. Industries
West King Street
Shippensburg, PA 17257

Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #4 Collected 10/08/85 by NHI

	RESULT		LIMIT OF	LAB CODE
Metals in Water	AS RECEIVED		DETECTION	
Aluminum	0.1	mg/l	0.1	07580000N
Barium	0.033	mg/l	0.005	07590000N
Calcium	84.3	mg/l	0.05	07650000N
Cadmium	< 0.005	mg/l	0.005	07660000N
Chromium	< 0.05	mg/l	0.05	07670000N
Copper	< 0.05	mg/l	0.05	07690000N
Iron	0.27	mg/l	0.05	07700000N
Lead	< 0.05	mg/l	0.05	07710000N
Magnesium	15.3	mg/l	0.05	07730000N
Manganese	< 0.005	mg/l	0.005	07740000N
Molybdenum	< 0.05	mg/l	0.05	07750000N
Nickel	< 0.05	mg/l	0.05	07760000N
Potassium	1.9	mg/l	0.5	07780000N
Silver	< 0.05	mg/l	0.05	07820000N
Sodium	3.4	mg/l	0.5	07830000N
Zinc	< 0.05	mg/l	0.05	07890000N

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FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa 17268 • (717) 762-9127

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Lee A. Seats, B.S. Group Ldr.
Inorganic Analysis



ANALYSIS REPORT 08:38:32 106891
WLK212 D 2 5

Lancaster Laboratories

INCORPORATED

LLI Sample No. WW 1021370

S.K.F. Industries
West King Street
Shippensburg, PA 17257

Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #4 Collected 10/08/85 by NHI

	RESULT		LIMIT OF	LAB CODE
	AS RECEIVED		DETECTION	
Volatiles in Groundwater				
Benzene	< 1.	ppb	1.	07030000N
Toluene	< 1.	ppb	1.	07040000N
Chlorobenzene	< 1.	ppb	1.	07050000N
Ethylbenzene	< 1.	ppb	1.	07060000N
Chloromethane	< 5.	ppb	5.	07110000N
Bromomethane	< 5.	ppb	5.	07120000N
2-Chloroethylvinyl ether	< 10.	ppb	10.	07130000N
Vinyl chloride	< 1.	ppb	1.	07140000N
Chloroethane	< 1.	ppb	1.	07150000N
Methylene chloride	< 1.	ppb	1.	07160000N
1,1-Dichloroethene	< 1.	ppb	1.	07170000N
1,1-Dichloroethane	< 1.	ppb	1.	07180000N
trans-1,2-Dichloroethene	< 1.	ppb	1.	07190000N
Chloroform	< 1.	ppb	1.	07200000N
1,2-Dichloroethane	< 1.	ppb	1.	07210000N
1,1,1-Trichloroethane	< 1.	ppb	1.	07220000N
Carbon tetrachloride	< 1.	ppb	1.	07230000N
Dichlorobromomethane	< 1.	ppb	1.	07240000N
1,2-Dichloropropane	< 1.	ppb	1.	07250000N
trans-1,3-Dichloropropene	< 1.	ppb	1.	07260000N
Trichloroethene	< 1.	ppb	1.	07270000N
Dibromochloromethane	< 1.	ppb	1.	07280000N
1,1,2-Trichloroethane	< 1.	ppb	1.	07290000N
cis-1,3-Dichloropropene	< 1.	ppb	1.	07300000N
Bromoform	< 2.	ppb	2.	07310000N
1,1,2,2-Tetrachloroethane	< 2.	ppb	2.	07320000N
Tetrachloroethene	< 1.	ppb	1.	07330000N

2 COPIES TO S.K.F. Industries

ATTN: F. Bucceri

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

The American Association for
Laboratory Accreditation
Chemical & Biological fields of testing



Member: American Council of
Independent Laboratories, Inc.

MAIN LABORATORY
2425 New Holland Pike. Lancaster, Pa. 17601 • (717) 656-2301

FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa. 17268 • (717) 762-9127

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysis



ANALYSIS REPORT

08:38:37 106891
WLK212 D 2 5

Lancaster Laboratories INCORPORATED

LLI Sample No. WW 1021371

S.K.F. Industries
West King Street
Shippensburg, PA 17257

Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #5 Collected 10/08/85 by NHI

ANALYSIS	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Chloride	20.	mg/l	4.	022401000
Sulfate	30.	mg/l	10.	022801300
Metals in Water		attached		051309000
Volatiles in Groundwater		attached		051510000

2 COPIES TO S.K.F. Industries

ATTN: F. Bucceri

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Chemical & Biological Fields of Testing

01898 0.00 021300



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2425 New Holland Pike Lancaster Pa 17601 • (717) 656-2301

FRANKLIN DIVISION
5424 Buchanan Trail East Waynesboro Pa 17268 • (717) 662-9121

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysis



ANALYSIS REPORT

08:38:38 106891
WLK212 D 2 5

Lancaster Laboratories INCORPORATED

LLI Sample No. WW 1021371

S.K.F. Industries
West King Street
Shippensburg, PA 17257

Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #5 Collected 10/08/85 by NHI

	RESULT		LIMIT OF	LAB CODE
Metals in Water	AS RECEIVED		DETECTION	
Aluminum	0.2	mg/l	0.1	07580000N
Barium	0.051	mg/l	0.005	07590000N
Calcium	90.5	mg/l	0.05	07650000N
Cadmium	< 0.005	mg/l	0.005	07660000N
Chromium	< 0.05	mg/l	0.05	07670000N
Copper	< 0.05	mg/l	0.05	07690000N
Iron	0.20	mg/l	0.05	07700000N
Lead	< 0.05	mg/l	0.05	07710000N
Magnesium	15.9	mg/l	0.05	07730000N
Manganese	< 0.005	mg/l	0.005	07740000N
Molybdenum	< 0.05	mg/l	0.05	07750000N
Nickel	< 0.05	mg/l	0.05	07760000N
Potassium	2.1	mg/l	0.5	07780000N
Silver	< 0.05	mg/l	0.05	07820000N
Sodium	7.4	mg/l	0.5	07830000N
Zinc	< 0.05	mg/l	0.05	07890000N

2 COPIES TO S.K.F. Industries

ATTN: F. Bucceri

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Chemical & Biological fields of testing



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FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa 17268 • (717) 762-9127

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Lee A. Seats, B.S. Group Ldr.
Inorganic Analysis



ANALYSIS REPORT 08:38:42 106891

WLK212 D 2 5

Lancaster Laboratories INCORPORATED

LLI Sample No. WW 1021371

S.K.F. Industries
West King Street
Shippensburg, PA 17257

Date Reported 10/29/85
Date Submitted 10/ 9/85
Discard Date 11/ 5/85
Collected by
P.O. 4010213
Rel.

Well #5 Collected 10/08/85 by NHI

	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Volatiles in Groundwater				
Benzene	< 1.	ppb	1.	07030000N
Toluene	< 1.	ppb	1.	07040000N
Chlorobenzene	< 1.	ppb	1.	07050000N
Ethylbenzene	< 1.	ppb	1.	07060000N
Chloromethane	< 5.	ppb	5.	07110000N
Bromomethane	< 5.	ppb	5.	07120000N
2-Chloroethylvinyl ether	< 10.	ppb	10.	07130000N
Vinyl chloride	< 1.	ppb	1.	07140000N
Chloroethane	< 1.	ppb	1.	07150000N
Methylene chloride	< 1.	ppb	1.	07160000N
1,1-Dichloroethene	< 1.	ppb	1.	07170000N
1,1-Dichloroethane	< 1.	ppb	1.	07180000N
trans-1,2-Dichloroethene	< 1.	ppb	1.	07190000N
Chloroform	1.	ppb	1.	07200000N
1,2-Dichloroethane	< 1.	ppb	1.	07210000N
1,1,1-Trichloroethane	< 1.	ppb	1.	07220000N
Carbon tetrachloride	< 1.	ppb	1.	07230000N
Dichlorobromomethane	< 1.	ppb	1.	07240000N
1,2-Dichloropropane	< 1.	ppb	1.	07250000N
trans-1,3-Dichloropropene	< 1.	ppb	1.	07260000N
Trichloroethene	< 1.	ppb	1.	07270000N
Dibromochloromethane	< 1.	ppb	1.	07280000N
1,1,2-Trichloroethane	< 1.	ppb	1.	07290000N
cis-1,3-Dichloropropene	< 1.	ppb	1.	07300000N
Bromoform	< 2.	ppb	2.	07310000N
1,1,2,2-Tetrachloroethane	< 2.	ppb	2.	07320000N
Tetrachloroethene	< 1.	ppb	1.	07330000N

2 COPIES TO S.K.F. Industries

ATTN: F. Bucceri

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5424 Buchanan Trail East, Waynesboro Pa 17268 • (717) 762 9127

Member American Council of
Independent Laboratories, Inc.

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysis

ANALYSIS REPORT



**LANCY
LABORATORIES**

Division, Lancy International, Inc.
525 W. New Castle St., P.O. Box 490
Zellennople, Pennsylvania 16063

SKF Industries
West King Street
Shippensburg, PA 17257

Attention: Robert Sterken

Report Date 12/5/85

Collected 11/4/85 by RS
Received 11/7/85 by LS
Analyzed 11/7 - 11/14/85 by Staff
No. of Samples 3
P.O. # 4-008156

Additional Analyses Requested

Sample	W63	F63	I63
Lab Reference #	<u>16455</u>	<u>16453</u>	<u>16454</u>
Parameter	(ug/L)	(ug/L)	(ug/L)
1,1-Dichloroethane	<2.0	<2.0	<2.0
1,2-trans-Dichloroethylene	<2.0	<2.0	<2.0

C. John Ritzert, Manager-Technical Services

SKF ROLLER BEARINGS DIVISION

SKF INDUSTRIES, INC.

November 27, 1985

Commonwealth of Pennsylvania
Department of Environmental Resources
Bureau of Solid Waste Management
One Ararat Boulevard
Harrisburg, PA 17110

Attention Mr. Robert Benvin

Dear Mr. Benvin:

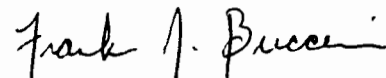
Please find enclosed the Professional Engineer's Certification of closure and analytical results on soil samples collected during closure activities here at the Shippensburg facility.

These documents are the finalization of closure. If you have any questions please advise me of such.

SKF will now enter into the Groundwater Monitoring Program as specified in the Addendum to Closure Plan, Section 9.0.

Your cooperation is appreciated.

Sincerely,



Frank J. Bucceri
Plant Engineer

jk
Enc.

cc: J. Roback
T. Taylor
B. McGlocklin



November 22, 1985

Mr. Frank Bucceri
SKF Industries
West King Street
Shippensburg, PA 17257

Dear Mr. Bucceri:

Lancy Laboratories is pleased to provide the enclosed analytical results on soil samples collected during closure activities at your Shippensburg facility. We have also enclosed the Professional Engineer's Certification of closure. Please note that this statement only certifies compliance with terms of the closure plan as modified and is not a statement in the quality of the soil remaining on site.

Should you have any questions, please feel free to contact Tim Hill or myself at your convenience.

Sincerely,

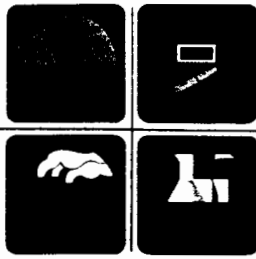
A handwritten signature in cursive script, reading "Roger A. Dhonau".

Roger A. Dhonau
Project Manager

Enclosure

LANCY

International, Inc.



525 West New Castle St. • P.O. Box 490 • Zelienople, PA 16063

Telephone (412) 452-9360 • Telex 86-6259

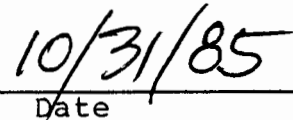
PROFESSIONAL ENGINEER CERTIFICATION OF CLOSURE

I, Timothy A. Hill, as registered professional engineer, hereby certify, that I have made a visual inspection of the closure site at:

SKF Roller Bearing Division
SKF Industries, Inc.
West King Street
Shippensburg, Pennsylvania

and to the best of my knowledge and belief, closure of the Sludge Tank Area has been performed in accordance with the Closure Plan and Addendum to Closure Plan, dated August 17, 1985, as submitted to the Pennsylvania Department of Environmental Resources, Bureau of Solid Waste Management by way of SKF letter dated September 3, 1985.


Signature


Date

PE-032649-E

Professional Engineering License Number

PA

State

Lancy International,
525 West New Castle Street,
Zelienople, PA 16063
(412) 452-9360

ANALYSIS REPORT



**LANCY
LABORATORIES**

Division, Lancy International, Inc.
525 W. New Castle St., P.O. Box 490
Zelienople, Pennsylvania 16063

SKF Industries
West King Street
Shippensburg, PA 17257

Attention: Frank Bucceri

Report Date 11/11/85

Collected 10/2,8/85 by TH
Received 10/3/85 by LS
Analyzed 10/3 - 11/3/85 by FJR
No. of Samples 4
P.O. # 4-010022

Required Soil Analysis for Closure Plan

Sample #	1	3	6	8
Lab Reference #	<u>15810</u>	<u>15812</u>	<u>15815</u>	<u>16053</u>
Parameter	(ug/Kg)	(Ug/Kg)	(ug/Kg)	(ug/Kg)
Trichloroethylene	850	280	31	1300
Perchloroethylene	<100	<100	<100	<100
Chloroform	<100	<100	<100	<100


C. John Ritzert, Manager-Technical Services

- Analyze for Volatile Organics from soil samples
Sample #'s ⑧, 9, 10, 11. 16053
- Location map to follow from T. Hill
- T. Hill to notify lab which LANCY LABORATORIES
samples to analyze.



HAZARDOUS WASTE SAMPLING RECORD

Company SKF IND

EPA ID No. _____

Street _____

City-State SHIPPENSBURG, PA

Contact FRANK BUCCERI

Telephone _____

Waste Description

Processes contributing to waste and percent each contributes to waste composition.

_____	_____
_____	_____
_____	_____
_____	_____

Characteristic Color _____

Odor ☒ yes _____

describe _____

☐ no _____

Layering ☒ none _____

bilayer _____ multilayer _____

Sampling Description

NOTE: Take a sufficient number of grab samples over a period of time to represent the variability of your waste.

Sampling Location Sludge tanks - closure plan

Type of Sampler ☐ Coli-wasa ☐ Dipper ☐ Trier ☐ Other _____

Number of grab samples taken from waste source _____

CAUTION: - WEAR NECESSARY PROTECTIVE CLOTHING AND GEAR, AND OBSERVE SAFETY PRECAUTIONS WHILE SAMPLING.

Sample Taken By T.A. Hill

Date 10/8/85 to _____

Witness PADER, SKF

Date 10/8/85

Date Shipped _____

FOR LAB USE ONLY

Client Linda Sheng
Porter [Signature]

Date Received 10/3/85

Period of Analysis 10/3-11/3/85

Date of Report 11/11/85

Ship to: LANCY LABORATORIES
525 WEST NEW CASTLE STREET
ZELIENOPLE, PA 16063

SKF ROLLER BEARINGS DIVISION

December 10, 1985

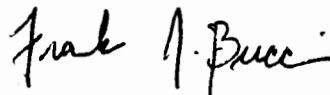
Commonwealth of Pennsylvania
Department of Environmental Resources
Bureau of Solid Waste Management
One Ararat Boulevard
Harrisburg, PA 17110

Dear Mr. Benvin:

Please find enclosed the Owners Certification of Closure as required by 40 CFR 265.115 and the plan showing soil sample locations.

I hope these items meet with your approval.

Sincerely,



Frank J. Bucceri ✓
Plant Engineer

ch

cc: B. McGlocklin
T. Taylor

SKF ROLLER BEARINGS DIVISION

OWNER CERTIFICATION OF CLOSURE (40 CFR 265.115)

I, Thomas E. Taylor, as Manager of Engineering for SKF Industries, Inc., Shippensburg Facility, hereby certify, that I have made visual inspections of the closure site and associated activities and to the best of my knowledge and belief, closure of the Sludge Tank Area has been performed in accordance with the Closure Plan and Addendum To Closure Plan, dated August 17, 1985.


Signature

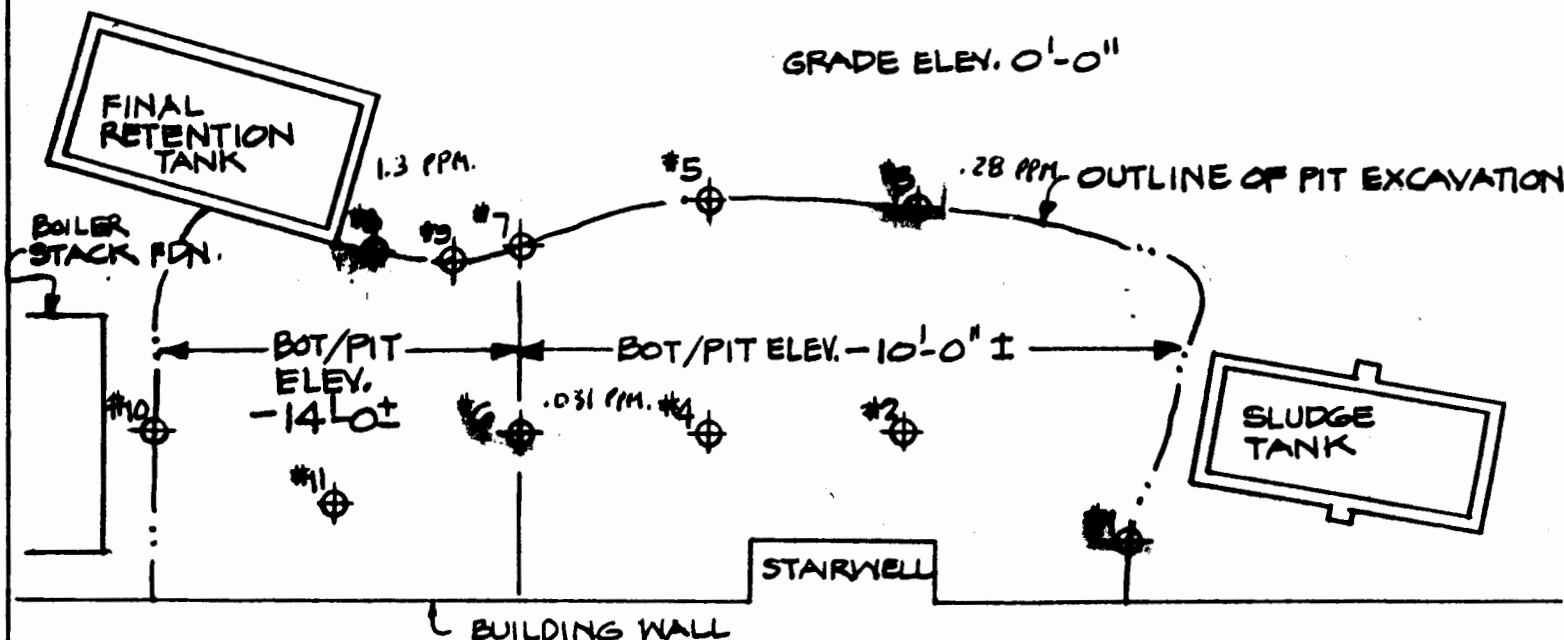

Date

PREPARED BY: T.A. HILL CLIENT: SKE INDUSTRIES
 CHECKED BY: _____ PROJECT NO.: _____
 DATE: 10/4/85 SHEET: 1 OF 1
 SUBJECT: LOCATION OF SOIL SAMPLES TAKEN BY
LANCY INT. AT SKE IND., SHIPPENSBURG, PA.

LANCY
 International, Inc.

DRAWING NO.:

- NOTES:**
1. #1 ⊕ - INDICATES LOCATION OF LANCY SOIL SAMPLES.
 2. SAMPLE NOS. 1, 3, 5, 7 TAKEN FROM WALL OF PIT AT APPROX. ELEV. -7'-6".
 3. SAMPLE NOS. 2, 4, 6 TAKEN FROM BOTTOM OF PIT.
 4. SAMPLE NOS. 1, 2, 3, 4, 5, 6, 7 TAKEN ON 10/2/85
 5. SAMPLE NOS. 8, 9, 10, 11 TAKEN ON 10/8/85
 6. SAMPLE NO. 8 TAKEN FROM WALL OF PIT AT ELEV. -9'-0"; NO. 9 TAKEN AT ELEV. -8'-0"; NO. 12 TAKEN AT ELEV. -12'-0" FROM GRADE.
 7. SAMPLE NO. 11 TAKEN AT BOTTOM OF PIT.



PLAN
 NO SCALE

SKF ROLLER BEARINGS DIVISION

December 16, 1985

Mr. Robert Benvin
Commonwealth of Pennsylvania
Department of Environmental Resources
Bureau of Solid Waste Management
One Ararat Boulevard
Harrisburg, PA 17110

Subject: ADDENDUM TO THE OCTOBER 1984 GROUNDWATER STUDY AS PREPARED
BY NASSAUX-HEMSLEY, INC., NOVEMBER 1985

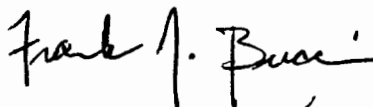
Dear Mr. Benvin:

Please review the Preliminary Addendum to the October 1984 Groundwater Study submitted to your office November 18, 1985, and respond with your comments to this addendum.

SKF Industries will examine your comments and appropriately submit a Final Addendum to the October 1984 Groundwater Study to your office.

Your cooperation is appreciated.

Sincerely,



Frank J. Bucceri ✓
Plant Engineer

ch

cc: T. Taylor
B. McGlocklin
J. Peffer, Nassaux-Hemsley ✓